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EXAMINER

PREVAL, LIONEL

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/598,945	Applicant(s) JONSSON ET AL.	
	Examiner LIONEL PREVAL	Art Unit 2419	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 15-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 15-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>09/15/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. **Claims** 15 - 19, 22, , 26, 27, 32, 33 are objected to because of the following informalities:

Regarding **Claim** 15, claim 15 recites the limitation “the traffic” in line 21. It would appear that applicant meant to recite “the downstream traffic packet”. If this is true, it is suggested that applicant change “the traffic” in line 21 to “the downstream traffic packet”.

Regarding **Claim** 17, claim 17 recites the limitation “the method of claim 16” in line 1. It would appear that applicant meant to recite “the method of claim 15”. If this is true, it is suggested that applicant change “the method of claim 16” in line 1 to “the method of claim 15”.

Regarding **Claim** 26, claim 26 recites the limitation “reolaces” in line 4. It would appear that applicant meant to recite “replaces”. If this is true, it is suggested that applicant change “reolaces” in line 4 to “replaces”.

Regarding **Claim** 32, claim 32 recites the limitation “the traffic” in line 21. It would appear that applicant meant to recite “the traffic packet”. If this is true, it is suggested that applicant change “the traffic” in line 21 to “the traffic packet”.

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Claims 16, 18, 19, 22, 27 and 33 are objected to because they depend from a claim which been objected.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 15 – 19, 26 and 27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding **Claim** 15, claim 15 recites the limitation “the traffic” in line 21. The recitation of "the traffic" renders the claim vague and indefinite because Examiner cannot ascertain what exactly applicant wishes to convey as a further claim limitation.

Regarding **Claim** 17, claim 17 recites the limitation “the method of claim 16” in line 1. The recitation of "the method of claim 16" renders the claim vague and indefinite because Examiner cannot ascertain what exactly applicant wishes to convey as a further claim limitation, as the step of mapping a VLAN tag for the second VLAN region to a VLAN tag for the first VLAN region, referred to in claim 17, is not performed in claim 16.

Regarding **Claim 26**, claim 26 recites the limitation “reolaces” in line 21. The recitation of "reolaces" renders the claim vague and indefinite because Examiner cannot ascertain what exactly applicant wishes to convey as a further claim limitation.

Claims 16, 18, 19 and 27 are rejected because they depend from a claim which has been rejected.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 15 – 17 are rejected under 35 U.S.C. 102(b) as being unpatentable over **McCloghrie et al.** (US 6304901 B1).

Regarding **Claim 15**, **McCloghrie et al.** teaches a method of providing multiple simultaneous services through a single broadband connection to an end user (**McCloghrie et al.**, FIG. 2, Item 203), the end user being connected to a core network through first and second independently tagged Virtual Local Area Network (VLAN) regions (**McCloghrie et al.**, FIG. 2, item 200), the method comprising the steps of: implementing a VLAN Mapping Point at a border between the first and second VLAN

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regions, wherein the first VLAN region is on a first side of the VLAN Mapping Point toward the end user, and the second VLAN region is on a second side of the VLAN Mapping Point toward the core network (Each LAN-switch ... associates that identifier with particular VLAN identifiers for each type of VLAN architecture, **McCloghrie et al.**, Column 2, lines 6 - 8); receiving in the VLAN Mapping Point, an upstream traffic packet from the first VLAN region (LAN-switches 103 forward frames ... among the networks 102, **McCloghrie et al.**, Column 2, lines 62 - 64); upon receiving the upstream packet: mapping in the VLAN Mapping Point, a VLAN tag for the first VLAN region to a VLAN tag for the second VLAN region (frame is bridged or routed from a first type of VLAN to a second type of VLAN, the first VLAN encapsulation is removed and the second VLAN encapsulation is added, **McCloghrie et al.**, Column 2, lines 9 - 11); and forwarding the upstream traffic packet to the core network using the VLAN tag for the second VLAN region (LAN-switches 103 forward frames ... among the networks 102, **McCloghrie et al.**, Column 2, lines 62 - 64); receiving in the VLAN Mapping Point, a downstream traffic packet from the second VLAN region (Each network 102 may transmit a set of frames 104 using one of a plurality of media access transmit protocols, **McCloghrie et al.**, Column 2, lines 56 - 58); upon receiving the downstream packet: mapping in the VLAN Mapping Point, a VLAN tag for the second VLAN region to a VLAN tag for the first VLAN region (Those frames 104 to be transmitted on a particular VLAN segment 108 are identified with a tag 107 referencing that particular VLAN 106, **McCloghrie et al.**, Column 3, lines 17 - 19); and forwarding the traffic to the end user using the VLAN tag for the first VLAN region (As the frame 104 is forwarded between differing VLAN

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technologies, the tag 107 uses a tagging technique particular to that VLAN technology, **McCloghrie et al.**, Column 3, lines 17 - 19).

Regarding **Claim 16**, **McCloghrie et al.** teaches a method wherein the step of mapping a VLAN tag for the first VLAN region to a VLAN tag for the second VLAN region includes the steps of: obtaining the VLAN tag for the second VLAN region from a table in the VLAN Mapping Point (To identify the outgoing tag 107 which corresponds to the incoming tag 107, the LAN-switch 103 maintains a database 205 which is preferably also available at the network administrative workstation 203. The database 205 comprises a table 206, **McCloghrie et al.**, Column 5, lines 4 - 13); and replacing a VLAN ID in the upstream traffic packet with the VLAN tag for the second VLAN region (The LAN-switches 103 are configured to (1) receive frames from a first VLAN ... (2) to remove the encapsulation, (3) to re-encapsulate the frames with a second VLAN transmit protocol, and (4) to transmit the re-encapsulated frames onto a second VLAN, **McCloghrie et al.**, Column 3, lines 17 - 19).

Regarding **Claim 17**, **McCloghrie et al.** teaches a method wherein the step of mapping a VLAN tag for the second VLAN region to a VLAN tag for the first VLAN region includes the steps of: obtaining the VLAN tag for the first VLAN region from a table in the VLAN Mapping Point (the LAN-switch 103 maintains a database 205 ... The database 205 comprises a table 206, **McCloghrie et al.**, Column 5, lines 4 - 13); and replacing a VLAN ID in the downstream traffic packet with the VLAN tag for the first VLAN region (The LAN-switches 103 are configured to (1) receive frames from a first

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VLAN ... (2) to remove the encapsulation, (3) to re-encapsulate the frames with a second VLAN transmit protocol, and (4) to transmit the re-encapsulated frames onto a second VLAN, **McCloghrie et al.**, Column 3, lines 17 – 19).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

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consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 18 – 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over **McCloghrie et al.** (US 6304901 B1) in view of **Shankar et al.** (US 20040151120 A1).

Regarding **Claim** 18, **McCloghrie et al.** teaches a method wherein the step of obtaining the VLAN tag for the first VLAN region from a table in the VLAN Mapping Point includes the steps of: extracting a destination Media Access Control (MAC) address from the unicast downstream packet (LAN-switch 103 receives a frame ... knows that the frame 104 must be configured ... for that port 202, responsive to the address or contents (preferably the MAC address), **McCloghrie et al.**, Column 4, lines 43 - 47); and obtaining the VLAN tag for the first VLAN region from the table by matching the extracted MAC address to a corresponding VLAN tag for the first VLAN region (the LAN-switch 103 maintains a database 205 ... The database 205 comprises a table 206, **McCloghrie et al.**, Column 5, lines 4 - 13). However, **McCloghrie et al.**, does not specifically teach determining whether the downstream traffic packet is a unicast packet or a multicast packet, which is well known in the art for packet transmission purposes. **Shankar et al.**, for example, from a similar field of endeavor teaches determining whether the downstream traffic packet is a unicast packet or a multicast packet (There can typically be three types of destination addresses (DA) i) unicast ... ii) multicast ... and iii) broadcast DA, **Shankar et al.**, paragraph [0038], lines 1 – 7).

Thus, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine determining whether the downstream traffic packet is a unicast packet or a multicast packet as taught by **Shankar et al.** in the system of **McCloghrie et al.**

The combining of determining whether the downstream traffic packet is a unicast packet or a multicast packet as described by **Shankar et al.** can be implemented in **McCloghrie et al.**'s system by using a plurality of look-up tables.

The motivation for determining whether the downstream traffic packet is a unicast packet or a multicast packet as taught by **Shankar et al.** in **McCloghrie et al.**'s system is to further enhance the system reliability and efficiency.

Regarding **Claim 19**, **McCloghrie et al.** teaches a method wherein the step of obtaining the VLAN tag for the first VLAN region from a table in the VLAN Mapping Point includes the steps of: extracting from the unicast downstream packet, a destination Media Access Control (MAC) address and the VLAN tag for the second VLAN region packet (LAN-switch 103 receives a frame ... knows that the frame 104 must be configured ... for that port 202, responsive to the address or contents (preferably the MAC address), **McCloghrie et al.**, Column 4, lines 43 - 47); and obtaining the VLAN tag for the first VLAN region from the table by matching the extracted MAC address and the VLAN tag for the second VLAN region to a corresponding VLAN tag for the first VLAN region (The LAN-switch 103 identifies the incoming VLAN 106 responsive to the MAC address of the frame 104, **McCloghrie et al.**, Column 4, lines 48 - 49). However, **McCloghrie et al.**, does not specifically teach

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determining whether the downstream traffic packet is a unicast packet or a multicast packet, which is well known in the art for packet transmission purposes. **Shankar et al.**, for example, from a similar field of endeavor teaches determining whether the downstream traffic packet is a unicast packet or a multicast packet (There can typically be three types of destination addresses (DA) i) unicast ... ii) multicast ... and iii) broadcast DA, **Shankar et al.**, paragraph [0038], lines 1 – 7).

Thus, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine determining whether the downstream traffic packet is a unicast packet or a multicast packet as taught by **Shankar et al.** in the system of **McCloghrie et al.**

The combining of determining whether the downstream traffic packet is a unicast packet or a multicast packet as described by **Shankar et al.** can be implemented in **McCloghrie et al.**'s system by using a plurality of look-up tables.

The motivation for determining whether the downstream traffic packet is a unicast packet or a multicast packet as taught by **Shankar et al.** in **McCloghrie et al.**'s system is to further enhance the system reliability and efficiency.

Regarding **Claim 20**, **McCloghrie et al.**, does not specifically teach a method wherein the step of obtaining the VLAN tag for the first VLAN region from a table in the VLAN Mapping Point also includes the step of: upon determining that the downstream traffic packet is a multicast packet, obtaining from the table, a common VLAN tag for all end users in the first VLAN region, which is well known in the art for packet transmission purposes. **Shankar et al.**, for example, from a similar field of endeavor teaches a

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method wherein the step of obtaining the VLAN tag for the first VLAN region from a table in the VLAN Mapping Point also includes the step of: upon determining that the downstream traffic packet is a multicast packet (There can typically be three types of destination addresses (DA) i) unicast ... ii) multicast ... and iii) broadcast DA, **Shankar et al.**, paragraph [0038], lines 1 – 7), obtaining from the table, a common VLAN tag for all end users in the first VLAN region (The L2 Multicast look-up table 410 can include one or more preprogrammed mask entries therein, **Shankar et al.**, paragraph [0038], lines 1 – 7).

Thus, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine a method wherein the step of obtaining the VLAN tag for the first VLAN region from a table in the VLAN Mapping Point also includes the step of: upon determining that the downstream traffic packet is a multicast packet, obtaining from the table, a common VLAN tag for all end users in the first VLAN region as taught by **Shankar et al.** in the system of **McCloghrie et al.**

The combining of a method wherein the step of obtaining the VLAN tag for the first VLAN region from a table in the VLAN Mapping Point also includes the step of: upon determining that the downstream traffic packet is a multicast packet, obtaining from the table, a common VLAN tag for all end users in the first VLAN region as described by **Shankar et al.** can be implemented in **McCloghrie et al.**'s system by using a plurality of look-up tables.

The motivation for having a method wherein the step of obtaining the VLAN tag for the first VLAN region from a table in the VLAN Mapping Point also includes the step of: upon determining that the downstream traffic packet is a multicast packet, obtaining

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from the table, a common VLAN tag for all end users in the first VLAN region as taught by **Shankar et al.** in **McCloghrie et al.**'s system is to further enhance the system reliability and efficiency.

Regarding **Claim 21**, **McCloghrie et al.** teaches a method wherein the step of obtaining the VLAN tag for the first VLAN region from a table in the VLAN Mapping Point also includes the steps of: wherein the VLAN Mapping Point changes the VLAN ID in each of the duplicated downstream traffic packets to include a different one of the associated VLAN tags for the first VLAN region, and forwards the duplicated downstream traffic packets to end users using the associated VLAN tags for the first VLAN region (The LAN-switches 103 are configured to (1) receive frames from a first VLAN ... (2) to remove the encapsulation, (3) to re-encapsulate the frames with a second VLAN transmit protocol, and (4) to transmit the re-encapsulated frames onto a second VLAN, **McCloghrie et al.**, Column 3, lines 17 - 19). However, **McCloghrie et al.**, does not specifically teach upon determining that the downstream traffic packet is a multicast packet, extracting an aggregate VLAN tag from the multicast downstream packet; determining a number of entries in the table for which VLAN tags for the first VLAN region are associated with the extracted aggregate VLAN tag; and duplicating the downstream traffic packet for each of the entries in the table for which a VLAN tag for the first VLAN region is associated with the extracted aggregate VLAN tag, which is well known in the art for packet transmission purposes. **Shankar et al.**, for example, from a similar field of endeavor teaches a method upon determining that the downstream traffic

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packet is a multicast packet (There can typically be three types of destination addresses (DA) i) unicast ... ii) multicast ... and iii) broadcast DA, **Shankar et al.**, paragraph [0038], lines 1 – 7), extracting an aggregate VLAN tag from the multicast downstream packet (The L2 Multicast look-up table 410 can include one or more preprogrammed mask entries therein, **Shankar et al.**, paragraph [0038], lines 1 – 7); determining a number of entries in the table for which VLAN tags for the first VLAN region are associated with the extracted aggregate VLAN tag (each mask entry within the L2 Multicast look-up table 410 can be accessed or indexed by using the customer VLAN ID, **Shankar et al.**, paragraph [0052], lines 6 – 9); and duplicating the downstream traffic packet for each of the entries in the table for which a VLAN tag for the first VLAN region is associated with the extracted aggregate VLAN tag (Each mask entry within the L2 Multicast look-up table 410 can be configured to be an outgoing port bit map 424 which can be a list of ports which maps to an L2 Multicast group, **Shankar et al.**, paragraph [0052], lines 6 – 9).

Thus, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine a method wherein upon determining that the downstream traffic packet is a multicast packet, extracting an aggregate VLAN tag from the multicast downstream packet; determining a number of entries in the table for which VLAN tags for the first VLAN region are associated with the extracted aggregate VLAN tag; and duplicating the downstream traffic packet for each of the entries in the table for which a VLAN tag for the first VLAN region is associated with the extracted aggregate VLAN tag as taught by **Shankar et al.** in the system of **McCloghrie et al.**

The combining of a method wherein upon determining that the downstream traffic packet is a multicast packet, extracting an aggregate VLAN tag from the multicast downstream packet; determining a number of entries in the table for which VLAN tags for the first VLAN region are associated with the extracted aggregate VLAN tag; and duplicating the downstream traffic packet for each of the entries in the table for which a VLAN tag for the first VLAN region is associated with the extracted aggregate VLAN tag as described by **Shankar et al.** can be implemented in **McCloghrie et al.'s** system by using a plurality of look-up tables.

The motivation for having a method wherein upon determining that the downstream traffic packet is a multicast packet, extracting an aggregate VLAN tag from the multicast downstream packet; determining a number of entries in the table for which VLAN tags for the first VLAN region are associated with the extracted aggregate VLAN tag; and duplicating the downstream traffic packet for each of the entries in the table for which a VLAN tag for the first VLAN region is associated with the extracted aggregate VLAN tag as taught by **Shankar et al.** in **McCloghrie et al.'s** system is to further enhance the system reliability and efficiency.

Regarding **Claim 22**, **McCloghrie et al.** does not teach a method wherein the first VLAN region is a last-mile network connecting the end user to the VLAN Mapping Point, and the second VLAN region is an aggregation network connecting a Layer 2 termination point to the VLAN Mapping Point, which are both well known in the art. However examiner takes official notice that it is well known in the art that a Mapping point is placed on the border between different VLAN regions. **McCloghrie et al.**

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discloses the claimed invention having multiple different VLANs, which may be combined in a single enterprise network, but does not disclose expressly the first VLAN region is a last-mile network connecting the end user to the VLAN Mapping Point, and the second VLAN region is an aggregation network connecting a Layer 2 termination point to the VLAN Mapping Point. It would have been an obvious matter of design choice to a person of ordinary skill in the art to modify the method as taught by **McCloghrie et al.** with the first VLAN region as a last-mile network connecting the end user to the VLAN Mapping Point, and the second VLAN region as an aggregation network connecting a Layer 2 termination point to the VLAN Mapping Point. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with multiple different VLANs as taught by **McCloghrie et al.**, because it's intended use fails to patentably distinguish over **McCloghrie et al.**. Therefore, it would have been an obvious matter of design choice to modify **McCloghrie et al.** to obtain the invention as specified in the claim(s).

Regarding **Claim 23**, **McCloghrie et al.** teaches a method wherein the VLAN tag for the first VLAN region is a VLAN-per-user-per-service tag (each device 101 may be associated with a VLAN transmit protocol, **McCloghrie et al.**, Column 3, lines 3 - 7), and the VLAN tag for the second VLAN region is a VLAN-per-service tag (frames 104 to be transmitted on a particular VLAN segment 108 are identified with a tag 107 referencing that particular VLAN, **McCloghrie et al.**, Column 3, lines 1 - 3).

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 24 – 26 are rejected under 35 U.S.C. 102(b) as being unpatentable over **McCloghrie et al.** (US 6304901 B1).

Regarding **Claim 24**, **McCloghrie et al.** teaches a Virtual Local Area Network (VLAN) Mapping Point (**McCloghrie et al.**, FIG. 1, Item 103) implemented at a border between first and second independently tagged VLAN regions (**McCloghrie et al.**, FIG. 1, Item 102), wherein the first VLAN region is on a first side of the VLAN Mapping Point toward an end user, and the second VLAN region is on a second side of the VLAN Mapping Point toward a core network (**McCloghrie et al.**, FIG. 1, Item 100), the VLAN Mapping Point comprising: a first interface for receiving upstream traffic packets from the first VLAN region, and for sending downstream traffic packets to the first VLAN region (**McCloghrie et al.**, FIG. 1, link 201); a second interface for receiving downstream traffic packets from the second VLAN region, and for sending upstream traffic packets to the second VLAN region (Each link 201 comprises a physical network 102, so that a set of frames 104 may be coupled between pairs of LAN-switches 103, **McCloghrie et al.**, Column 2, lines 58 - 62); and a mapping function connected to the first and second interfaces that, upon receiving from the first interface an upstream traffic packet that includes a VLAN tag for the first VLAN region, maps the VLAN tag for

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the first VLAN region to a VLAN tag for the second VLAN region (frame is bridged or routed from a first type of VLAN to a second type of VLAN, the first VLAN encapsulation is removed and the second VLAN encapsulation is added, **McCloghrie et al.**, Column 2, lines 9 - 11), and sends the mapped upstream traffic packet to the second interface (LAN-switches 103 forward frames ... among the networks 102, **McCloghrie et al.**, Column 2, lines 62 - 64), and, upon receiving from the second interface a downstream traffic packet that includes a VLAN tag for the second VLAN region, maps the VLAN tag for the second VLAN region to a VLAN tag for the first VLAN region, and sends the mapped upstream traffic packet to the second interface (Each LAN-switch ... associates that identifier with particular VLAN identifiers for each type of VLAN architecture, **McCloghrie et al.**, Column 2, lines 6 - 8).

Regarding **Claim 25**, **McCloghrie et al.** teaches a VLAN Mapping Point wherein the mapping function includes: a mapping table that matches VLAN tags for the first VLAN region to associated VLAN tags for the second VLAN region (the LAN-switch 103 maintains a database 205 ... The database 205 comprises a table 206, **McCloghrie et al.**, Column 5, lines 4 - 13); and means for changing a VLAN ID in received traffic packets, the means for changing a VLAN ID replacing the VLAN ID in upstream traffic packets with the VLAN tag for the second VLAN region (The LAN-switches 103 are configured to (1) receive frames from a first VLAN ... (2) to remove the encapsulation, (3) to re-encapsulate the frames with a second VLAN transmit protocol, and (4) to transmit the re-encapsulated frames onto a second VLAN, **McCloghrie et al.**, Column 3, lines 17 - 19).

Regarding **Claim 26**, **McCloghrie et al.** teaches a VLAN Mapping Point wherein the mapping table also matches VLAN tags for the second VLAN region to associated VLAN tags for the first VLAN region (Each LAN-switch ... associates that identifier with particular VLAN identifiers for each type of VLAN architecture, **McCloghrie et al.**, Column 2, lines 6 - 8), and the means for changing a VLAN ID in a received traffic packet also replaces the VLAN ID of downstream traffic packets with the VLAN tag for the first VLAN region (The LAN-switches 103 are configured to (1) receive frames from a first VLAN ... (2) to remove the encapsulation, (3) to re-encapsulate the frames with a second VLAN transmit protocol, and (4) to transmit the re-encapsulated frames onto a second VLAN, **McCloghrie et al.**, Column 3, lines 17 – 19).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

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4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 27 – 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over **McCloghrie et al.** (US 6304901 B1) in view of **Shankar et al.** (US 20040151120 A1).

Regarding **Claim 27**, **McCloghrie et al.** teaches a VLAN Mapping Point wherein the mapping function also includes: means for extracting a destination Media Access Control (MAC) address from the unicast downstream packet (LAN-switch 103 receives a frame ... knows that the frame 104 must be configured ... for that port 202, responsive to the address or contents (preferably the MAC address), **McCloghrie et al.**, Column 4, lines 43 - 47); and means for obtaining the VLAN tag for the first VLAN region from the mapping table by matching the extracted MAC address to a corresponding VLAN tag for the first VLAN region (the LAN-switch 103 maintains a database 205 ... The database 205 comprises a table 206, **McCloghrie et al.**, Column 5, lines 4 - 13). However,

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McCloghrie et al., does not specifically teach means for determining whether a received downstream traffic packet is a unicast packet or a multicast packet, which is well known in the art for packet transmission purposes. **Shankar et al.**, for example, from a similar field of endeavor teaches means for determining whether a received downstream traffic packet is a unicast packet or a multicast packet (There can typically be three types of destination addresses (DA) i) unicast ... ii) multicast ... and iii) broadcast DA, **Shankar et al.**, paragraph [0038], lines 1 – 7).

Thus, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine means for determining whether a received downstream traffic packet is a unicast packet or a multicast packet as taught by **Shankar et al.** in the system of **McCloghrie et al.**

The combining of means for determining whether a received downstream traffic packet is a unicast packet or a multicast packet as described by **Shankar et al.** can be implemented in **McCloghrie et al.**'s system by using a plurality of look-up tables.

The motivation for means for determining whether a received downstream traffic packet is a unicast packet or a multicast packet as taught by **Shankar et al.** in **McCloghrie et al.**'s system is to further enhance the system reliability and efficiency.

Regarding **Claim 28**, **McCloghrie et al.** teaches a VLAN Mapping Point wherein the mapping function also includes: means, for obtaining from the mapping table, a common VLAN tag for all end users in the first VLAN region(LAN-switch 103 receives a frame ... knows that the frame 104 must be configured ... for that port 202, responsive to the address or contents (preferably the MAC address), **McCloghrie et al.**, Column 4,

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lines 43 - 47). However, **McCloghrie et al.**, does not specifically teach means responsive to determining that the downstream traffic packet is a multicast packet, which is well known in the art for packet transmission purposes. **Shankar et al.**, for example, from a similar field of endeavor teaches means responsive to determining that the downstream traffic packet is a multicast packet (There can typically be three types of destination addresses (DA) i) unicast ... ii) multicast ... and iii) broadcast DA, **Shankar et al.**, paragraph [0038], lines 1 – 7).

Thus, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine means responsive to determining that the downstream traffic packet is a multicast packet as taught by **Shankar et al.** in the system of **McCloghrie et al.**

The combining of means responsive to determining that the downstream traffic packet is a multicast packet as described by **Shankar et al.** can be implemented in **McCloghrie et al.**'s system by using a plurality of look-up tables.

The motivation for means responsive to determining that the downstream traffic packet is a multicast packet as taught by **Shankar et al.** in **McCloghrie et al.** 's system is to further enhance the system reliability and efficiency.

Regarding **Claim 29**, **McCloghrie et al.** teaches a VLAN Mapping Point wherein the mapping function also includes: means wherein the VLAN Mapping Point replaces the VLAN ID in each of the duplicated downstream traffic packets with a different one of the associated VLAN tags for the first VLAN region, and

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forwards the duplicated downstream traffic packets to end users using the associated VLAN tags for the first VLAN region (The LAN-switches 103 are configured to (1) receive frames from a first VLAN ... (2) to remove the encapsulation, (3) to re-encapsulate the frames with a second VLAN transmit protocol, and (4) to transmit the re-encapsulated frames onto a second VLAN, **McCloghrie et al.**, Column 3, lines 17 - 19). However, **McCloghrie et al.**, does not specifically teach means responsive to determining that the downstream traffic packet is a multicast packet, for extracting an aggregate VLAN tag from the multicast downstream packet; means for determining a number of entries in the table for which VLAN tags for the first VLAN region are associated with the extracted aggregate VLAN tag; and means for duplicating the downstream traffic packet for each of the entries in the table for which a VLAN tag for the first VLAN region is associated with the extracted aggregate VLAN tag, which is well known in the art for packet transmission purposes. **Shankar et al.**, for example, from a similar field of endeavor teaches means responsive to determining that the downstream traffic packet is a multicast packet, (There can typically be three types of destination addresses (DA) i) unicast ... ii) multicast ... and iii) broadcast DA, **Shankar et al.**, paragraph [0038], lines 1 – 7), for extracting an aggregate VLAN tag from the multicast downstream packet (each mask entry within the L2 Multicast look-up table 410 can be accessed or indexed by using the customer VLAN ID, **Shankar et al.**, paragraph [0052], lines 6 – 9); means for determining a number of entries in the table for which VLAN tags for the first VLAN region are associated with the extracted aggregate VLAN tag (The L2 Multicast look-up table 410 can include one or more preprogrammed mask entries therein, **Shankar et al.**, paragraph [0038], lines 1 – 7); and means for duplicating the

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downstream traffic packet for each of the entries in the table for which a VLAN tag for the first VLAN region is associated with the extracted aggregate VLAN tag (Each mask entry within the L2 Multicast look-up table 410 can be configured to be an outgoing port bit map 424 which can be a list of ports which maps to an L2 Multicast group, **Shankar et al.**, paragraph [0052], lines 6 – 9)

Thus, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine means responsive to determining that the downstream traffic packet is a multicast packet, for extracting an aggregate VLAN tag from the multicast downstream packet; means for determining a number of entries in the table for which VLAN tags for the first VLAN region are associated with the extracted aggregate VLAN tag; and means for duplicating the downstream traffic packet for each of the entries in the table for which a VLAN tag for the first VLAN region is associated with the extracted aggregate VLAN tag as taught by **Shankar et al.** in the system of **McCloghrie et al.**

The combining of means responsive to determining that the downstream traffic packet is a multicast packet, for extracting an aggregate VLAN tag from the multicast downstream packet; means for determining a number of entries in the table for which VLAN tags for the first VLAN region are associated with the extracted aggregate VLAN tag; and means for duplicating the downstream traffic packet for each of the entries in the table for which a VLAN tag for the first VLAN region is associated with the extracted aggregate VLAN tag as described by **Shankar et al.** can be implemented in **McCloghrie et al.'s** system by using a plurality of look-up tables.

The motivation for having means responsive to determining that the downstream traffic packet is a multicast packet, for extracting an aggregate VLAN tag from the multicast downstream packet; means for determining a number of entries in the table for which VLAN tags for the first VLAN region are associated with the extracted aggregate VLAN tag; and means for duplicating the downstream traffic packet for each of the entries in the table for which a VLAN tag for the first VLAN region is associated with the extracted aggregate VLAN tag as taught by **Shankar et al.** in **McCloghrie et al.** 's system is to further enhance the system reliability and efficiency.

Regarding **Claim 30**, **McCloghrie et al.** does not teach a VLAN Mapping Point wherein the first VLAN region is a last-mile network connecting the end user to the VLAN Mapping Point, and the second VLAN region is an aggregation network connecting a Layer 2 termination point to the VLAN Mapping Point, which are both well known in the art. However examiner takes official notice that it is well known in the art that a Mapping point is placed on the border between different VLAN regions.

McCloghrie et al. discloses the claimed invention having multiple different VLANs, which may be combined in a single enterprise network, but does not disclose expressly the first VLAN region is a last-mile network connecting the end user to the VLAN Mapping Point, and the second VLAN region is an aggregation network connecting a Layer 2 termination point to the VLAN Mapping Point. It would have been an obvious matter of design choice to a person of ordinary skill in the art to modify the method as taught by **McCloghrie et al.** with the first VLAN region as a last-mile network connecting the end user to the VLAN Mapping Point, and the second VLAN region as

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an aggregation network connecting a Layer 2 termination point to the VLAN Mapping Point. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with multiple different VLANs as taught by **McCloghrie et al.**, because it's intended use fails to patentably distinguish over **McCloghrie et al.**.

Therefore, it would have been an obvious matter of design choice to modify

McCloghrie et al. to obtain the invention as specified in the claim(s).

Regarding **Claim 31**, **McCloghrie et al.** teaches a VLAN Mapping Point wherein the VLAN tag for the first VLAN region is a VLAN-per-user-per-service tag (each device 101 may be associated with a VLAN transmit protocol, **McCloghrie et al.**, Column 3, lines 3 - 7), and the VLAN tag for the second VLAN region is a VLAN-per-service tag (frames 104 to be transmitted on a particular VLAN segment 108 are identified with a tag 107 referencing that particular VLAN, **McCloghrie et al.**, Column 3, lines 1 - 3).

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 32 is rejected under 35 U.S.C. 102(b) as being unpatentable over **McCloghrie et al.** (US 6304901 B1).

Regarding **Claim 32**, **McCloghrie et al.** teaches a method of mapping Ethernet traffic packets between first and second independently tagged Virtual Local Area Network (VLAN) regions (**McCloghrie et al.**, FIG. 2, item 200), the method comprising the steps of: implementing a VLAN Mapping Point at a border between the first and second VLAN regions, the VLAN Mapping Point including a mapping function that associates VLAN tags for each of the VLAN regions with VLAN tags for the other VLAN region (Each LAN-switch ... associates that identifier with particular VLAN identifiers for each type of VLAN architecture, **McCloghrie et al.**, Column 2, lines 6 - 8); receiving in the VLAN Mapping Point, a traffic packet from the first VLAN region, the traffic packet from the first VLAN region including a VLAN tag for the first VLAN region (LAN-switches 103 forward frames ... among the networks 102, **McCloghrie et al.**, Column 2, lines 62 - 64); upon receiving the traffic packet from the first VLAN region: mapping in the VLAN Mapping Point, the VLAN tag for the first VLAN region to an associated VLAN tag for the second VLAN region (frame is bridged or routed from a first type of VLAN to a second type of VLAN, the first VLAN encapsulation is removed and the second VLAN encapsulation is added, **McCloghrie et al.**, Column 2, lines 9 - 11); and forwarding the traffic packet to the second VLAN region using the VLAN tag for the second VLAN region (LAN-switches 103 forward frames ... among the networks 102, **McCloghrie et al.**, Column 2, lines 62 - 64); receiving in the VLAN Mapping Point, a traffic packet from the second VLAN region, the traffic packet from the second VLAN region including a VLAN tag for the second VLAN region (Each network 102 may transmit a set of frames 104 using one of a plurality of media access transmit protocols, **McCloghrie et al.**, Column 2, lines 56 - 58); and upon receiving the traffic packet from the second VLAN

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region: mapping in the VLAN Mapping Point, the VLAN tag for the second VLAN region to a VLAN tag for the first VLAN region (Those frames 104 to be transmitted on a particular VLAN segment 108 are identified with a tag 107 referencing that particular VLAN 106, **McCloghrie et al.**, Column 3, lines 17 - 19); and forwarding the traffic to the first VLAN region using the VLAN tag for the first VLAN region (As the frame 104 is forwarded between differing VLAN technologies, the tag 107 uses a tagging technique particular to that VLAN technology, **McCloghrie et al.**, Column 3, lines 17 - 19).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

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were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 33 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over **McCloghrie et al.** (US 6304901 B1).

Regarding **Claim** 33, **McCloghrie et al.** does not teach a method wherein the first VLAN region is a last-mile network connecting the end user to the VLAN Mapping Point, and the second VLAN region is an aggregation network connecting a Layer 2 termination point to the VLAN Mapping Point, which are both well known in the art. However examiner takes official notice that it is well known in the art that a Mapping point is placed on the border between different VLAN regions. **McCloghrie et al.** discloses the claimed invention having multiple different VLANs, which may be combined in a single enterprise network, but does not disclose expressly the first VLAN region is a last-mile network connecting the end user to the VLAN Mapping Point, and the second VLAN region is an aggregation network connecting a Layer 2 termination point to the VLAN Mapping Point. It would have been an obvious matter of design choice to a person of ordinary skill in the art to modify the method as taught by **McCloghrie et al.** with the first VLAN region as a last-mile network connecting the end user to the VLAN Mapping Point, and the second VLAN region as an aggregation

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network connecting a Layer 2 termination point to the VLAN Mapping Point. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with multiple different VLANs as taught by **McCloghrie et al.**, because it's intended use fails to patentably distinguish over **McCloghrie et al.**.

Therefore, it would have been an obvious matter of design choice to modify

McCloghrie et al. to obtain the invention as specified in the claim(s).

Regarding **Claim 34**, **McCloghrie et al.** teaches a method wherein the VLAN tag for the first VLAN region is a VLAN-per-user-per-service tag (each device 101 may be associated with a VLAN transmit protocol, **McCloghrie et al.**, Column 3, lines 3 - 7), and the VLAN tag for the second VLAN region is a VLAN-per-service tag (frames 104 to be transmitted on a particular VLAN segment 108 are identified with a tag 107 referencing that particular VLAN, **McCloghrie et al.**, Column 3, lines 1 - 3).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 35 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over **McCloghrie et al.** (US 6304901 B1) in view of **Shankar et al.** (US 20030174706 A1).

Regarding **Claim** 35, **McCloghrie et al.** teaches a method of providing multiple simultaneous services through a single broadband connection to an end user (**McCloghrie et al.**, FIG. 2, Item 203), the end user being connected to a core network through first and second independently tagged Virtual Local Area Network (VLAN)

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regions (**McCloghrie et al.**, FIG. 2, item 200), the method comprising the steps of: implementing an access node at a border between the first and second VLAN regions, wherein the first VLAN region is on a first side of the access node toward the end user, and the second VLAN region is on a second side of the access node toward the core network (Each LAN-switch ... associates that identifier with particular VLAN identifiers for each type of VLAN architecture, **McCloghrie et al.**, Column 2, lines 6 - 8); mapping by the access node, VLAN tags received in upstream traffic packets to VLAN tags for the second VLAN region (frame is bridged or routed from a first type of VLAN to a second type of VLAN, the first VLAN encapsulation is removed and the second VLAN encapsulation is added, **McCloghrie et al.**, Column 2, lines 9 - 11; and mapping by the access node, VLAN tags in downstream traffic packets received from the second VLAN region to VLAN tags for the first VLAN region (As the frame 104 is forwarded between differing VLAN technologies, the tag 107 uses a tagging technique particular to that VLAN technology, **McCloghrie et al.**, Column 3, lines 17 - 19). However, **McCloghrie et al.**, does not specifically teach separating, in the second VLAN region, traffic from multiple end users, by implementing an Address Resolution Protocol (ARP) proxy function in the access node that ensures that upstream traffic packets from the first VLAN region are always sent to a designated access router, which is well known in the art for packet transmission purposes. **Shankar et al.**, for example, from a similar field of endeavor teaches separating, in the second VLAN region, traffic from multiple end users, by implementing an Address Resolution Protocol (ARP) proxy function in the access node that ensures that upstream traffic packets from the first VLAN region are always sent to a designated access router (The L2 Address table may be configured to

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perform the same functions as an ARL (address resolution logic) table, **Shankar et al.**, paragraph [0053], lines 1 – 10).

Thus, it would have been obvious to a person of ordinary skill in the art at the time of the invention to combine separating, in the second VLAN region, traffic from multiple end users, by implementing an Address Resolution Protocol (ARP) proxy function in the access node that ensures that upstream traffic packets from the first VLAN region are always sent to a designated access router as taught by **Shankar et al.** in the system of **McCloghrie et al.**

The combining of separating, in the second VLAN region, traffic from multiple end users, by implementing an Address Resolution Protocol (ARP) proxy function in the access node that ensures that upstream traffic packets from the first VLAN region are always sent to a designated access router as described by **Shankar et al.** can be implemented in **McCloghrie et al.**'s system by using a plurality of look-up tables.

The motivation for separating, in the second VLAN region, traffic from multiple end users, by implementing an Address Resolution Protocol (ARP) proxy function in the access node that ensures that upstream traffic packets from the first VLAN region are always sent to a designated access router as taught by **Shankar et al.** in **McCloghrie et al.**'s system is to further enhance the system reliability and efficiency.

Regarding **Claim 36**, **McCloghrie et al.** teaches a method wherein the VLAN tags for the first VLAN region are VLAN-per-user-per-service tags (each device 101 may be associated with a VLAN transmit protocol, **McCloghrie et al.**, Column 3, lines 3 - 7), and the VLAN tags for the second VLAN region are VLAN-per-service tags (frames

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104 to be transmitted on a particular VLAN segment 108 are identified with a tag 107 referencing that particular VLAN, **McCloghrie et al.**, Column 3, lines 1 - 3).

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. **Merchant et al.**(US 6775290 B1) is cited to show a method of enabling a port of a network switch to support connections with multiple VLANs which comprises storing VLAN data indicating a plurality of VLAN identifiers corresponding to the multiple VLANs supported by the port. A VLAN identifier of a data packet received via the port is compared with the plurality of VLAN identifiers determined using the stored VLAN data, which is similar to aspects of the claimed invention.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LIONEL PREVAL whose telephone number is (571) 270-5673. The examiner can normally be reached on Monday - Thursday 10:00AM - 4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dang Ton can be reached on (571) 272-3171. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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Art Unit 2419

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